

## Nanotechnology Promotes Faster Bone Growth Around Spinal Implants

People who need spinal implants are already in pain. But if new bone growth doesn't properly secure an implant after surgery, it can rub against other bones causing further pain and potential scarring. "If you stub your toe or floss your teeth and get bacteria in your bloodstream, it could colonize that scar tissue and you can get an infection," says Matt Hedrick, CEO of Nanovis, an Indiana-based company focused on improving spinal implant outcomes.



To improve spinal implant outcomes, Nanovis was founded using a bundle of technology from three universities: Purdue University, Brown University, and Rensselaer Polytechnic Institute. The technology centered around a spinal implant nano-surface that acts as a scaffold for bone and bone stem cells, which leads to better implant fixing and faster bone growth after surgery.

To propel the technology forward, the company applied for a Small Business Innovative Research (SBIR) grant from the National Institute of Arthritis and Musculoskeletal and Skin Diseases. The funding they received in 2015 allowed Nanovis scientists to show that their nano-surface implants promoted faster bone growth compared to non-surface implants. These findings supported Nanovis' FDA clearance, which they received in 2018.

Hedrick says the SBIR program is especially important for startup companies that may be too early in their innovation to attract venture capital. And he points out that unlike other areas of research, SBIR-funded projects can lead to direct patient benefits. "If they're successful, they move forward and make a difference in patients' lives, in addition to moving the field forward."

Along with funding the nano-surface implant research, Hedrick says the SBIR grant helped the company commercialize their products. To date, 11,000 people in the U.S. have received a Nanovis spinal implant.

The company has also received SBIR funding from both the National Institute on Aging and the National Cancer Institute and has used the latter to develop regenerative bladder graft technology for bladder cancer repair.

Hedrick says the company is currently expanding this nanotechnology onto other spinal implants such as orthopedic screws. "The more we can provide patients with implants with the potential for improved fixation, the more we can help not only take care of our middle-aged active population, but help our aging population be as active as they can be as well."



Nanovis, LLC  
5865 East State Road 14  
Columbia City, IN 46725

Matt Hedrick  
[matt.hedrick@nanovisinc.com](mailto:matt.hedrick@nanovisinc.com)  
October 27, 2021